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2011 MICHIGAN SPRING TURKEY HUNTER SURVEY

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ABSTRACT

A survey of turkey hunters was conducted following the 2011 spring hunting season to determine turkey harvest and hunter participation. In 2011, about 84,125 hunters harvested about 30,587 turkeys. Statewide, 36% of hunters harvested a turkey. Nearly 62% of the hunters rated their hunting experience as excellent, very good, or good in 2011. About 91% of the hunters reported they experienced no or only minor interference from other hunters. The number of hunters and their harvest declined significantly (declined 9% and 17%, respectively) between 2010 and 2011. In addition, hunter success (36 versus 40%) and hunter satisfaction (62 versus 66%) in 2011 declined significantly from 2010.

INTRODUCTION

Michigan's spring turkey (*Meleagris gallopavo*) hunting season was based originally on an area and quota system. This system was set up primarily to distribute hunters across geographic areas (management units) and time (hunt periods). As the turkey population has expanded statewide, license types were created that allowed hunters to hunt in multiple management units. The goal of the current system has been to provide hunting opportunities while maintaining acceptable levels of hunter satisfaction (Luukkonen 1998).

In 2011, nearly the entire state was open for wild turkey hunting from April 18 through May 31 (Figure 1). The area open for turkey hunting (58,114 square miles) was expanded by 9,967 square miles from 2010 by allowing hunting throughout the Upper Peninsula, except Isle Royale. The statewide hunting area was divided into 12 management units (Figure 1). Hunting licenses were available on these management units for three types of hunts: (1) quota [limited licenses available] hunts on both public and private lands in a specific management unit, (2) quota hunt on



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private lands in southern Michigan [Hunt 301 in Unit ZZ], and (3) a guaranteed hunt (no quota) that included all units [Hunt 234].

People interested in obtaining a turkey hunting license could enter into a random drawing (lottery) conducted by the Department of Natural Resources (DNR) or purchase a license for Hunt 234 between January 1 and May 1 without going through the lottery. Each applicant in the lottery could select up to two hunt choices (any combination of quota and unlimited quota hunts). The lottery consisted of two drawings. The first drawing was used to select applicants based on their preferred hunt choice. The second drawing was among applicants who were not successful in the first drawing, and was based on the hunter's second choice for a hunt. Any licenses available after the drawing was completed were made available on a first-come, first-served basis to applicants that were unsuccessful in the drawing. Unsuccessful applicants could purchase one leftover license or a license for Hunt 234. Beginning one week after licenses were available to unsuccessful applicants, all remaining licenses except licenses for Hunt 234 were made available to nonapplicants. After May 1, Hunt 234 was available for purchase only to applicants. Hunters were allowed to purchase one license and take one bearded turkey with the harvest tag issued with their license.

A limited number of licenses were available for quota hunts, and they were valid only in a certain management unit and only during a limited time period (7-44 days). Most quota hunts began before May 4 and lasted for seven days. A private land management unit (Unit ZZ) was created in 2002 that included all private lands in southern Michigan (Figure 1). Hunters who selected Hunt 301 could hunt the first two weeks of the season (April 18-May 1) anywhere on private lands in Unit ZZ. This unit and hunt period was created to provide additional hunting opportunity and increased flexibility for hunters who had difficulty finding time to hunt during shorter quota hunts.

Licenses for Hunt 234 could be used in any management unit. They were valid on public and private lands, except in Unit ZZ, where they were only valid on private lands or on Fort Custer military lands. Hunt 234 started later than most quota hunts but lasted for 30 days (May 2-31). An unlimited number of licenses were available for Hunt 234.

The Pure Michigan Hunt (PMH) was a unique multi-species hunting opportunity offered for the first time in 2010. Individuals could purchase an unlimited number of applications for the PMH. Three individuals were randomly chosen from all applications, and winners received elk, bear, spring turkey, fall turkey, and antlerless deer hunting licenses and could participate in a reserved waterfowl hunt on a managed waterfowl area. The turkey hunting licenses were valid for all areas open for hunting turkey and during all turkey hunting periods. Furthermore, the PMH license holder could hunt any season until their turkey harvest tag was filled.

Hunters could use a bow and arrow, crossbow, or shotgun with number 4 or smaller shot (including a muzzleloading shotgun) to hunt turkeys. Hunters using a crossbow were required to obtain a free crossbow stamp, except hunters with a disability already hunting under a DNR-issued crossbow permit, did not need the stamp.

The DNR and the Natural Resources Commission have the authority and responsibility to protect and manage the wildlife resources of the state of Michigan. Harvest surveys are a management tool used by the Wildlife Division to accomplish its statutory responsibility. Estimating harvest, hunting effort, and hunter satisfaction are the primary objectives of this survey.

METHODS

The Wildlife Division provided all hunters the option to report voluntarily information about their turkey hunting activity via the internet. This option was advertised in the hunting regulation booklet and through a statewide news release. Hunters could report information anytime during the hunting season. Hunters reported whether they hunted, the days spent afield, whether they harvested a turkey, type of device used while hunting (i.e., firearm, crossbow, or bow and arrow), and whether other hunters caused interference during their hunt (none, minor, some irritation, or major problem). Successful hunters were also asked to report where their turkeys were taken (public or private land), date of harvest, and beard length of the harvested bird. Birds with a beard less than six inches were classified as juveniles (one year old), while birds with longer beards were adults (two years old or greater; Kelly, 1975). Finally, hunters rated their overall hunting experience (excellent, very good, good, fair, or poor).

Following the 2011 spring turkey hunting season, a questionnaire was sent to 11,930 randomly selected people that had purchased a turkey hunting license (resident turkey, senior resident turkey, and nonresident turkey licenses) and had not already voluntarily reported harvest information via the internet. Hunters receiving the questionnaire were asked to report the same information that was collected from hunters that reported voluntarily on the internet.

Estimates were calculated using a stratified random sampling design that included 16 strata (Cochran 1977). Hunters were stratified based on the management unit where their license was valid (12 management units). Hunters who purchased a license that could be used in multiple management units (PMH license holders and licenses for hunts 234 and 301) were treated as separate strata (strata 13-15). Moreover, people that had voluntarily reported information about their hunting activity via the internet were treated as a separate stratum (sixteenth stratum).

A 95% confidence limit (CL) was calculated for each estimate. This CL could be added to and subtracted from the estimate to calculate the 95% confidence interval. The confidence interval was a measure of the precision associated with the estimate and implies the true value would be within this interval 95 times out of 100. Estimates were based on information collected from random samples of hunting license buyers. Thus, these estimates were subject to sampling errors (Cochran 1977). Estimates were not adjusted for possible response or nonresponse biases.

Statistical tests are used routinely to determine the likelihood that differences among estimates are larger than expected by chance alone. The overlap of 95% confidence intervals was used to determine whether estimates differed. Non-overlapping 95% confidence intervals was equivalent to stating the difference between the means

was larger than would be expected 995 out of 1,000 times ($P < 0.005$), if the study had been repeated (Payton et al. 2003).

Questionnaires were mailed initially during mid-July 2011, and nonrespondents were mailed up to two follow-up questionnaires. Although 11,930 people were sent the questionnaire, 156 surveys were undeliverable resulting in an adjusted sample size of 11,774. Questionnaires were returned by 7,681 people, yielding a 65% adjusted response rate. In addition, 3,604 people voluntarily reported information about their hunting activity via the internet before the random sample was selected.

RESULTS AND DISCUSSION

In 2011, licenses were purchased by 106,889 people, a decrease of nearly 7% from 2010 (Table 1). Most of the people buying a license were males (93%), and the average age of the license buyers was 45 years (Figure 2). Nearly 9% (9,936) of the license buyers were younger than 17 years old.

About 79% ($\pm 1\%$) of license buyers hunted turkeys (84,125 hunters). Most of these hunters were males ($78,183 \pm 1,035$), although nearly 7% ($\pm 1\%$) of the hunters were females ($5,942 \pm 542$). Estimated hunter numbers (Table 2) declined about 9% between 2010 and 2011 (92,463 versus 84,125 hunters). Counties listed in descending order with more than 2,400 hunters afield included Allegan, Montcalm, and Kent (Table 3).

Hunters spent an estimated 383,994 days afield pursuing turkeys (4.6 ± 0.1 days/hunter), and harvested approximately 30,587 birds (Figure 3). Counties listed in descending order with hunters taking more than 900 turkeys included Newaygo, Kent, Montcalm, and Jackson (Table 3). Hunter effort decreased significantly by 8% from 2010, and statewide harvest also decreased significantly by 17% from 2010. Hunter success was 36% in 2011, which was significantly lower than the 40% hunter success experienced in 2010.

About 26% ($\pm 2\%$) of the harvested birds were juvenile males ($7,859 \pm 603$); 73% ($\pm 2\%$) were adult males ($22,384 \pm 927$), and about 1% were bearded females (251 ± 110). Additionally, the age of a small number of harvested birds ($< 1\%$) was unknown (94 ± 72) because hunters failed to report a beard length.

Hunting effort and the number of turkeys harvested were generally highest during the earliest hunting periods (Figures 4-7). For turkeys that the harvest date was known, 38% of these birds were taken during the first seven days (April 18-24). Daily hunter success generally was more than 7% during April 18 through May 2. Daily hunter success was generally below 7% during May 3-31. Hunting effort and harvest generally was greater on the weekends than weekdays.

About 82% of turkey hunters hunted solely on private land; 13% hunted on public land only; and 5% hunted on both private and public lands (Table 4). Of the 30,587 turkeys harvested in 2011, $90 \pm 1\%$ were taken on private land ($27,395 \pm 997$ birds). About $10 \pm 1\%$ of the harvest ($3,176 \pm 378$ birds) was taken on public land.

Hunter satisfaction is one measure used to assess the turkey management program in Michigan. Of the estimated 84,125 people hunting turkeys in 2011, $62 \pm 1\%$ of the hunters rated their hunting experience as either excellent ($13,813 \pm 762$ hunters), very good ($15,608 \pm 814$), or good ($22,842 \pm 952$) (Table 5). Nearly $20 \pm 1\%$ of the hunters rated their experience as fair ($16,404 \pm 842$ hunters). Only $17 \pm 1\%$ of the hunters rated their experience as poor ($14,035 \pm 786$ hunters). About 1% of the hunters ($1,106 \pm 233$ hunters) failed to rate their hunting experience.

Hunter satisfaction is affected by many factors such as hunting success and whether hunting activities were completed without interference (Luukkonen 1998). In 2011, $71 \pm 1\%$ of the hunters reported no hunter interference; $20 \pm 1\%$ reported minor interference; $7 \pm 1\%$ reported some irritation caused by hunter interference; and $2 \pm 1\%$ reported hunter interference was a major problem (Table 6).

Although interference can affect hunter satisfaction, hunter satisfaction was more closely associated with hunter success (Figures 8 and 9). Hunter success was greatest for hunts beginning April 18; however, satisfaction varied little among the hunt periods (Table 7).

Compared to 2010, hunter numbers, hunter effort, and harvest decreased significantly statewide in 2011 (Table 8). Hunter success and satisfaction also declined significantly in 2011 (Table 9). However, the proportion of hunters that indicated they experienced no or only minor interference with another hunter was similar in both 2010 and 2011.

Most hunters ($92 \pm 1\%$) used firearms while hunting turkeys, although $8 \pm 1\%$ of the hunters used archery equipment (compound, recurve, or long bows), and $4 \pm 1\%$ used a crossbow. Most hunters ($94 \pm 1\%$) used a firearm to harvest their turkeys, while $4 \pm 1\%$ used archery equipment, and $2 \pm 1\%$ used a crossbow. Hunters using a crossbow to hunt turkeys were required to obtain a crossbow stamp, unless they were a disabled hunter that already had a DNR-issued crossbow permit. About $38 \pm 6\%$ of the turkey hunters using a crossbow had obtained the crossbow stamp.

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Table 1. Number of hunting licenses available and people applying for licenses during the 2011 Michigan spring turkey hunting season.

Management unit or hunt period	Licenses available (quota)	Number of eligible applicants ^a	Number of applicants successful in drawing	Number of licenses remaining after drawing	Number of licenses purchased by successful applicants ^b	Number of licenses purchased by unsuccessful applicants ^b	Number of licenses purchased by people not in the drawing ^b	Number of licensees ^b
A	5,500	2,356	2,372	3,127	1,677	1	879	2,557
E	1,700	1,724	1,638	62	1,176	5	43	1,224
F	5,000	3,409	3,397	1,602	2,427	2	484	2,913
J	4,000	1,703	1,720	2,278	1,223	6	616	1,845
K	8,500	9,596	8,499	0	6,315	0	0	6,315
M	8,000	1,219	1,224	6,776	923	0	3,564	4,487
ZA	4,800	2,266	2,257	2,541	1,676	6	1,303	2,985
ZB	1,750	1,050	1,002	748	728	7	405	1,140
ZC	2,400	1,526	1,480	919	1,076	10	647	1,733
ZD	40	71	37	3	20	0	2	22
ZE	2,000	1,883	1,594	407	1,142	42	280	1,464
ZF	5,600	2,452	2,475	3,123	1,940	8	2,149	4,097
Hunt 234	NA	553	780	NA	1,411	397	43,308	45,116
Hunt 301	65,000	12,109	12,257	52,738	10,140	118	20,730	30,988
Pure MI Hunt	3	NA	NA	NA	NA	NA	3	3
Statewide	114,293	41,917	40,732	74,324	31,874	602	74,413	106,889

^aNumber of eligible applicants selecting the management unit as their first choice to hunt.

^bIf a licensee purchased more than one license, only the latest purchase is included in the summary of licenses purchased.

Table 2. Number of hunters, hunting efforts, harvest, hunter success, hunter satisfaction, and hunter interference during the spring 2011 Michigan turkey hunting season.

Management unit	Hunters ^a		Hunting efforts (days) ^a		Harvest ^a		Hunter success		Hunter satisfaction ^b		Noninterfered hunters ^c	
	Total	95% CL	Total	95% CL	Total	95% CL	%	95% CL	%	95% CL	%	95% CL
Hunt periods with quotas (General limited quota hunt periods)												
A	2,125	108	8,936	855	529	115	25	5	39	6	91	3
E	723	72	2,795	417	200	52	28	7	50	8	94	4
F	2,453	120	8,963	695	465	115	19	5	46	6	89	4
J	1,560	78	5,441	419	616	101	39	6	57	6	91	4
K	5,543	236	19,783	1,481	2,256	339	41	6	60	6	91	3
M	3,337	245	18,834	2,842	1,188	243	36	7	57	7	93	4
ZA	2,469	136	9,019	966	1,124	172	46	6	69	6	87	4
ZB	930	55	3,281	374	262	59	28	6	62	7	87	5
ZC	1,354	86	5,515	683	333	80	25	6	65	6	83	5
ZD	17	4	56	19	5	4	31	20	79	17	90	13
ZE	1,162	71	3,829	399	351	72	30	6	69	6	90	4
ZF	3,372	189	17,181	2,228	1,024	212	30	6	63	6	87	4
Pure MI Hunt	3	0	11	8	2	2	50	57	100	0	100	0
Subtotal	25,048	472	103,642	4,301	8,354	551	33	2	58	2	90	1
Hunt period 301 with quota (Private lands in Management Unit ZZ; April 18-May 1, 2011)												
ZA	6,783	463	27,542	2,515	3,216	340	47	4	71	3	92	2
ZB	2,468	302	10,558	1,815	935	189	38	6	66	6	94	3
ZC	3,858	370	15,634	1,952	1,532	241	40	5	72	5	86	4
ZD	369	121	1,383	556	122	70	33	16	69	15	87	11
ZE	6,863	464	28,441	2,490	2,912	324	42	4	67	4	90	2
ZF	5,731	435	25,127	2,439	2,384	296	42	4	66	4	92	2
Unknown	601	156	2,687	877	27	32	4	5	38	13	88	9
Subtotal	26,080	414	111,372	3,779	11,128	536	43	2	68	2	91	1

^aNumber of hunters does not add up to statewide total because hunters can hunt in more than one unit for hunts 234 and 301. Column totals for hunting effort and harvest may not equal statewide totals because of rounding errors.

^bProportion of hunters that rated their hunting experience as excellent, very good, or good.

^cProportion of hunters that indicated they experienced no or only minor interference from other hunters.

Table 2 (continued). Number of hunters, hunting efforts, harvest, hunter success, hunter satisfaction, and hunter interference during the spring 2011 Michigan turkey hunting season.

Management unit	Hunters ^a		Hunting efforts (days) ^a		Harvest ^a		Hunter success		Hunter satisfaction ^b		Noninterfered hunters ^c	
	Total	95% CL	Total	95% CL	Total	95% CL	%	95% CL	%	95% CL	%	95% CL
Unlimited quota hunt period (Guaranteed Hunt 234; May 2-31, 2011)												
A	1,039	244	5,716	1,679	204	109	20	9	25	10	89	8
E	1,289	270	5,320	1,428	447	160	35	10	61	10	95	5
F	1,663	305	8,702	2,103	192	105	12	6	35	9	88	6
J	1,130	252	5,334	1,553	253	118	22	9	59	11	98	3
K	6,968	583	32,972	3,764	2,437	363	35	4	56	5	92	3
M	304	130	1,054	493	37	45	12	14	41	21	100	0
ZA	6,784	580	35,464	4,171	2,425	363	36	4	66	4	90	3
ZB	1,773	316	7,951	1,923	599	186	34	9	62	9	92	5
ZC	2,814	391	14,917	2,895	666	191	24	6	58	7	91	4
ZD	257	122	1,049	653	55	55	21	19	73	21	93	12
ZE	5,366	523	24,105	3,252	1,988	329	37	5	70	5	92	3
ZF	4,702	495	23,967	3,448	1,768	313	38	5	68	5	89	3
Unknown	577	183	2,427	1,000	35	45	6	8	41	16	77	14
Subtotal	32,997	722	168,979	7,181	11,105	694	34	2	60	2	91	1
Statewide	84,125	957	383,994	9,184	30,587	1,035	36	1	62	1	91	1

^aNumber of hunters does not add up to statewide total because hunters can hunt in more than one unit for hunts 234 and 301. Column totals for hunting effort and harvest may not equal statewide totals because of rounding errors.

^bProportion of hunters that rated their hunting experience as excellent, very good, or good.

^cProportion of hunters that indicated they experienced no or only minor interference from other hunters.

Table 3. Estimated number of hunters, hunting effort, harvest, hunter success, hunter satisfaction, and hunter interference during the 2011 Michigan spring turkey hunting season. Estimates combined quota and unlimited quota hunts in each county.

County	Hunters ^a		Hunting efforts (days) ^a		Harvest ^a		Hunter success		Hunter satisfaction ^b		Noninterfered hunters ^c	
	95%		95%		95%		95%		95%		95%	
	Total	CL	Total	CL	Total	CL	%	CL	%	CL	%	CL
Alcona	1,169	211	5,039	1,226	268	98	23	8	38	9	96	4
Alger	177	108	901	639	61	64	35	29	88	20	99	0
Allegan	2,641	347	11,890	2,129	897	212	34	7	62	7	89	4
Alpena	849	175	3,948	1,050	177	81	21	9	25	9	89	7
Antrim	800	161	2,557	569	263	90	33	10	62	10	97	3
Arenac	395	136	1,878	813	143	82	36	17	60	17	87	11
Baraga	58	61	307	399	20	37	35	51	70	46	65	51
Barry	1,939	307	8,354	1,731	472	150	24	7	48	8	88	6
Bay	496	152	2,394	942	228	101	46	15	64	15	87	10
Benzie	361	155	1,315	658	122	93	34	21	46	22	94	9
Berrien	1,137	237	6,211	1,771	354	130	31	10	68	10	86	8
Branch	1,165	234	4,762	1,180	503	149	43	10	77	9	92	6
Calhoun	1,567	273	6,356	1,410	650	173	41	9	70	8	90	5
Cass	1,117	233	5,243	1,407	421	141	38	10	76	9	88	7
Charlevoix	431	121	1,431	493	137	60	32	13	70	13	90	7
Cheboygan	544	140	2,001	711	175	68	32	12	61	13	90	7
Chippewa	177	105	834	679	60	61	34	28	56	30	89	20
Clare	791	189	2,948	854	242	108	31	11	53	12	96	4
Clinton	1,544	269	6,651	1,484	565	158	37	8	70	8	89	5
Crawford	635	162	2,490	736	67	47	11	7	46	13	86	9
Delta	763	211	3,667	1,468	203	113	27	13	49	15	95	7

^aNumber of hunters does not add up to statewide total because hunters can hunt in more than one county. Column totals for hunting effort and harvest may not equal statewide totals because of rounding errors.

^bProportion of hunters that rated their hunting experience as excellent, very good, or good.

^cProportion of hunters that indicated they experienced no or only minor interference from other hunters.

Table 3 (continued). Estimated number of hunters, hunting effort, harvest, hunter success, hunter satisfaction, and hunter interference during the 2011 Michigan spring turkey hunting season. Estimates combined quota and unlimited quota hunts in each county.

County	Hunters ^a		Hunting efforts (days) ^a		Harvest ^a		Hunter success		Hunter satisfaction ^b		Noninterfered hunters ^c	
	Total	95% CL	Total	95% CL	Total	95% CL	%	95% CL	%	95% CL	%	95% CL
Dickinson	526	178	2,341	919	145	97	27	16	50	18	96	7
Eaton	1,242	246	5,614	1,516	404	137	33	9	63	10	92	6
Emmet	402	127	1,784	841	118	67	29	14	63	16	94	6
Genesee	1,634	266	8,072	1,868	585	157	36	8	64	8	88	5
Gladwin	720	171	2,532	886	250	102	35	11	63	11	96	5
Gogebic	79	73	594	663	2	0	3	2	50	47	76	40
Gd. Traverse	1,227	282	4,371	1,163	431	170	35	11	57	12	87	8
Gratiot	1,249	240	5,785	1,688	518	157	41	10	71	9	89	6
Hillsdale	1,657	277	6,265	1,384	684	178	41	8	68	8	93	4
Houghton	77	71	270	265	19	37	25	41	53	46	100	0
Huron	1,383	233	5,829	1,436	417	131	30	8	66	8	87	6
Ingham	1,564	266	6,187	1,468	601	166	38	8	72	8	90	5
Ionia	1,546	270	6,765	1,532	684	175	44	9	65	8	85	6
Iosco	762	171	2,991	799	187	88	25	10	48	12	95	5
Iron	533	180	3,365	1,846	221	120	42	18	70	16	92	9
Isabella	1,525	268	6,129	1,516	590	163	39	9	75	8	97	3
Jackson	2,362	313	9,640	1,647	959	204	41	7	61	7	90	4
Kalamazoo	1,312	256	6,237	1,656	484	155	37	9	61	10	88	6
Kalkaska	684	211	2,688	963	163	107	24	14	47	16	94	6
Kent	2,431	332	9,969	1,906	1,044	216	43	7	70	6	90	4
Keweenaw	0	0	0	0	0	0	0	0	0	0	0	0

^aNumber of hunters does not add up to statewide total because hunters can hunt in more than one county. Column totals for hunting effort and harvest may not equal statewide totals because of rounding errors.

^bProportion of hunters that rated their hunting experience as excellent, very good, or good.

^cProportion of hunters that indicated they experienced no or only minor interference from other hunters.

Table 3 (continued). Estimated number of hunters, hunting effort, harvest, hunter success, hunter satisfaction, and hunter interference during the 2011 Michigan spring turkey hunting season. Estimates combined quota and unlimited quota hunts in each county.

County	Hunters ^a		Hunting efforts (days) ^a		Harvest ^a		Hunter success		Hunter satisfaction ^b		Noninterfered hunters ^c	
	Total	95% CL	Total	95% CL	Total	95% CL	%	95% CL	%	95% CL	%	95% CL
Lake	1,215	277	4,626	1,206	269	135	22	10	48	12	90	7
Lapeer	2,341	317	10,360	1,916	718	176	31	6	63	7	87	4
Leelanau	315	148	1,019	539	115	93	37	23	68	22	87	16
Lenawee	963	210	4,212	1,278	371	133	39	11	71	10	91	6
Livingston	1,535	249	6,580	1,454	585	155	38	8	68	8	92	4
Luce	0	0	0	0	0	0	0	0	0	0	0	0
Mackinac	59	64	428	588	0	0	0	0	0	0	100	0
Macomb	666	174	2,924	1,001	157	82	24	11	69	12	83	10
Manistee	791	225	3,157	1,152	154	99	19	11	48	14	84	10
Marquette	258	128	853	572	21	37	8	14	30	23	100	0
Mason	821	229	3,356	1,054	244	125	30	13	45	14	81	11
Mecosta	1,504	304	6,211	1,710	665	206	44	10	66	10	95	5
Menominee	1,048	235	4,792	1,292	431	162	41	12	56	13	94	6
Midland	1,173	233	5,098	1,488	562	161	48	10	68	9	95	4
Missaukee	901	243	3,364	1,129	238	121	26	12	48	14	88	9
Monroe	527	156	2,070	810	180	89	34	14	73	13	89	9
Montcalm	2,506	344	11,489	2,136	983	213	39	7	65	7	89	4
Montmorency	651	164	3,406	1,221	77	54	12	8	27	11	87	9
Muskegon	1,461	267	6,137	1,502	548	164	38	9	70	9	94	4
Newaygo	2,358	378	9,915	2,113	1,112	269	47	8	66	8	93	4
Oakland	1,461	231	5,424	1,289	498	139	34	8	71	7	84	6

^aNumber of hunters does not add up to statewide total because hunters can hunt in more than one county. Column totals for hunting effort and harvest may not equal statewide totals because of rounding errors.

^bProportion of hunters that rated their hunting experience as excellent, very good, or good.

^cProportion of hunters that indicated they experienced no or only minor interference from other hunters.

Table 3 (continued). Estimated number of hunters, hunting effort, harvest, hunter success, hunter satisfaction, and hunter interference during the 2011 Michigan spring turkey hunting season. Estimates combined quota and unlimited quota hunts in each county.

County	Hunters ^a		Hunting efforts (days) ^a		Harvest ^a		Hunter success		Hunter satisfaction ^b		Noninterfered hunters ^c	
	Total	95% CL	Total	95% CL	Total	95% CL	%	95% CL	%	95% CL	%	95% CL
Oceana	998	252	3,669	1,126	446	172	45	13	64	12	93	7
Ogemaw	757	176	3,452	1,247	122	75	16	9	50	12	89	7
Ontonagon	99	82	534	508	20	37	21	34	60	41	100	0
Osceola	955	245	3,904	1,377	336	143	35	12	59	13	94	6
Oscoda	844	190	3,095	842	71	51	8	6	38	11	89	8
Otsego	658	166	2,536	827	143	74	22	10	47	13	96	4
Ottawa	1,814	295	7,712	1,666	771	190	42	8	73	7	92	4
Presque Isle	636	156	2,923	855	239	97	38	12	41	12	89	9
Roscommon	795	180	3,367	1,036	164	80	21	9	38	11	82	9
Saginaw	2,178	320	8,626	1,619	852	202	39	7	70	7	88	5
St. Clair	2,009	296	8,260	1,645	573	152	29	7	64	7	90	4
St. Joseph	964	217	5,064	1,634	540	164	56	11	78	9	93	6
Sanilac	1,860	285	7,378	1,507	634	167	34	7	67	7	95	4
Schoolcraft	99	82	569	624	0	0	0	0	60	41	80	34
Shiawassee	1,540	266	6,976	1,598	720	182	47	9	70	8	91	5
Tuscola	1,881	271	7,976	1,649	718	171	38	7	60	7	93	4
Van Buren	1,648	283	7,673	1,777	670	181	41	9	74	8	94	4
Washtenaw	1,456	241	5,214	1,104	463	133	32	8	67	8	91	5
Wayne	102	71	394	285	2	2	2	2	58	34	88	21
Wexford	1,094	264	3,652	1,087	374	160	34	12	52	12	94	6
Unknown	3,717	420	16,997	2,619	266	114	7	3	48	6	86	4

^aNumber of hunters does not add up to statewide total because hunters can hunt in more than one county. Column totals for hunting effort and harvest may not equal statewide totals because of rounding errors.

^bProportion of hunters that rated their hunting experience as excellent, very good, or good.

^cProportion of hunters that indicated they experienced no or only minor interference from other hunters.

Table 4. Estimated number and proportion of hunters hunting on private and public lands during the spring 2011 Michigan turkey hunting season.^a

Management unit	Private land only				Public land only				Both private and public lands				Unknown land			
	Total	95% CL	%	95% CL	Total	95% CL	%	95% CL	Total	95% CL	%	95% CL	Total	95% CL	%	95% CL
Hunt periods with quotas (General limited quota hunt periods)																
A	1,588	138	75	5	418	105	20	5	119	60	6	3	0	0	0	0
E	452	69	63	7	212	55	29	7	58	32	8	4	0	0	0	0
F	1,148	158	47	6	1,087	156	44	6	195	81	8	3	22	29	1	1
J	884	107	57	6	399	87	26	5	262	75	17	5	15	20	1	1
K	3,605	351	65	6	1,383	292	25	5	531	197	10	4	23	44	0	1
M	1,993	276	60	7	567	184	17	5	738	206	22	6	39	52	1	2
ZA	1,260	176	51	7	1,030	168	42	6	180	82	7	3	0	0	0	0
ZB	279	60	30	6	534	70	57	7	105	41	11	4	11	14	1	2
ZC	573	97	42	7	725	101	54	7	41	31	3	2	15	20	1	1
ZD	9	4	52	21	8	4	48	21	0	0	0	0	0	0	0	0
ZE	402	77	35	6	699	86	60	6	53	31	5	3	7	12	1	1
ZF	1,763	244	52	7	1,240	225	37	6	335	135	10	4	34	45	1	1
PMH	3	0	100	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal	13,960	608	56	2	8,303	516	33	2	2,619	356	10	1	166	93	1	0
Hunt 301 with quota (Private lands in Management Unit ZZ; April 18-May 1, 2011)																
ZA	6,783	463	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZB	2,468	302	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZC	3,858	370	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZD	369	121	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZE	6,863	464	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZF	5,731	435	100	0	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	601	156	100	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal	26,080	414	100	0	0	0	0	0	0	0	0	0	0	0	0	0

^aRow totals may not equal 100% because of rounding errors.

Table 4 (continued). Estimated number and proportion of hunters hunting on private and public lands during the spring 2011 Michigan turkey hunting season.^a

Management unit	Private land only				Public land only				Both private and public lands				Unknown land			
	Total	95% CL	95% %	95% CL	Total	95% CL	95% %	95% CL	Total	95% CL	95% %	95% CL	Total	95% CL	95% %	95% CL
Unlimited quota hunt period (Guaranteed Hunt 234; May 2-31, 2011)																
A	669	196	64	11	237	118	23	10	133	89	13	8	0	0	0	0
E	994	238	77	9	178	100	14	7	100	77	8	6	17	32	1	2
F	607	186	36	9	868	223	52	9	172	100	10	6	17	32	1	2
J	650	191	58	11	312	134	28	10	152	95	13	8	17	32	1	3
K	4,840	499	69	4	1,460	283	21	4	585	183	8	3	83	71	1	1
M	130	83	43	21	105	77	34	21	52	55	17	16	17	32	5	10
ZA ^b	6,784	580	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZB ^b	1,773	316	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZC ^b	2,814	391	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZD ^b	257	122	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZE ^b	5,366	523	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZF ^b	4,702	495	100	0	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	438	160	76	14	55	55	10	9	18	32	3	5	50	55	9	9
Subtotal	28,565	783	87	1	2,732	385	8	1	1,500	290	5	1	199	109	1	0
Statewide ^c	68,589	1,074	82	1	11,035	644	13	1	4,119	459	5	1	382	147	0	0

^aRow totals may not equal 100% because of rounding errors.

^bLicenses for the unlimited quota hunt were valid only on private lands in Management Unit ZZ in southern Michigan (Figure 1).

^cNumber of hunters does not add up to statewide total because hunters can hunt in more than one unit for the unlimited quota hunts.

Table 5. How hunters rated their hunting experience during the spring 2011 Michigan turkey hunting season.

Management unit	Satisfaction level (% of hunters) ^a					
	Excellent	Very good	Good	Fair	Poor	No answer
Hunt periods with quotas (General limited quota hunt periods)						
A	9	10	20	19	41	1
E	16	16	17	25	25	1
F	5	17	25	17	35	2
J	14	19	25	18	24	1
K	19	18	24	20	19	0
M	12	15	31	24	18	1
ZA	16	23	30	17	12	1
ZB	18	20	25	26	12	0
ZC	14	16	35	17	16	2
ZD	42	10	27	10	10	0
ZE	21	20	28	18	11	2
ZF	17	21	25	20	16	1
Pure MI Hunt	0	50	50	0	0	0
Mean	15	18	26	20	21	1
Hunt 301 with quota (Private lands in Management Unit ZZ; April 18-May 1, 2011)						
ZA	23	21	26	15	12	1
ZB	16	23	27	19	14	1
ZC	19	21	32	17	10	1
ZD	20	10	39	24	7	0
ZE	21	20	26	18	13	2
ZF	22	18	26	19	13	1
Unknown	2	7	30	18	32	12
Mean	21	20	27	18	13	1

^aRow totals may not equal 100% because of rounding errors.

Table 5 (continued). How hunters rated their hunting experience during the spring 2011 Michigan turkey hunting season.

Management unit	Satisfaction level (% of hunters) ^a					No answer
	Excellent	Very good	Good	Fair	Poor	
Unlimited quota hunt period (Guaranteed Hunt 234; May 2-31, 2011)						
A	6	8	10	23	48	5
E	16	15	30	19	19	1
F	4	11	20	24	36	4
J	11	17	31	14	27	0
K	12	20	24	23	21	1
M	12	17	12	29	30	0
ZA	15	19	32	21	13	1
ZB	14	21	27	23	14	1
ZC	11	20	27	24	18	1
ZD	13	21	40	13	13	0
ZE	19	21	30	18	10	2
ZF	18	20	30	20	11	2
Unknown	6	9	26	20	36	3
Mean	14	18	28	21	17	1
Statewide ^b	16	19	27	19	17	1

^aRow totals may not equal 100% because of rounding errors.

^bStatewide mean satisfaction levels (all hunts and periods).

Table 6. Estimated amount of hunter interference experienced by turkey hunters during the spring 2011 Michigan turkey hunting season.

Manage-ment unit	Interference level (% of hunters) ^a				
	None	Minor	Some irritation	Major problem	No answer
Hunt periods with quotas (General limited quota hunt periods)					
A	73	18	6	3	0
E	75	19	4	1	1
F	69	20	6	3	3
J	70	21	7	1	1
K	72	19	7	2	0
M	72	21	5	1	1
ZA	58	30	11	1	1
ZB	64	23	11	2	0
ZC	60	24	12	4	1
ZD	90	0	0	10	0
ZE	63	27	6	2	1
ZF	57	30	10	3	1
Pure MI Hunt	50	50	0	0	0
Mean	67	23	8	2	1
Hunt 301 with quota (Private lands in Management Unit ZZ; April 18-May 1, 2011)					
ZA	71	21	6	2	0
ZB	72	22	5	1	0
ZC	70	16	10	3	0
ZD	77	10	13	0	0
ZE	72	18	6	2	1
ZF	74	18	6	2	0
Unknown	70	18	4	4	4
Mean	72	19	7	2	1

^aRow totals may not equal 100% because of rounding errors.

Table 6 (continued). Estimated amount of hunter interference experienced by turkey hunters during the spring 2011 Michigan turkey hunting season.

Management unit	Interference level (% of hunters) ^a				
	None	Minor	Some irritation	Major problem	No answer
Unlimited quota hunt period (Guaranteed Hunt 234; May 2-31, 2011)					
A	72	16	7	3	2
E	83	12	5	0	0
F	65	23	11	1	0
J	75	23	2	0	0
K	73	19	6	2	1
M	83	17	0	0	0
ZA	72	18	7	3	1
ZB	74	18	6	1	1
ZC	75	16	8	1	0
ZD	67	26	6	0	0
ZE	76	17	5	1	1
ZF	70	19	8	1	1
Unknown	68	9	9	6	9
Mean	73	18	6	2	1
Statewide ^b	71	20	7	2	1

^aRow totals may not equal 100% because of rounding errors.

^bStatewide mean interference levels (all hunts and periods).

Table 7. Estimated number of hunting efforts, hunters, hunting success, noninterfered hunters, and hunter rating of the 2011 spring turkey hunting season, by hunt periods.

Variable	Hunt periods beginning									
	April 18		April 25		May 2		May 9		All periods ^a	
	Estimate	95% CL	Estimate	95% CL	Estimate	95% CL	Estimate	95% CL	Estimate	95% CL
Hunting efforts (days)	168,688	5,253	23,927	1,976	183,903	7,580	7,476	1,232	383,994	9,184
Number of hunters	40,009	699	6,721	463	35,802	775	1,593	193	84,125	957
Successful hunters (n)	16,123	705	2,070	317	11,858	718	537	125	30,587	1,035
Successful hunters (%)	40	2	31	4	33	2	34	7	36	1
Noninterfered hunters (n) ^b	36,006	734	6,168	454	32,616	815	1,420	185	76,209	1,054
Noninterfered hunters (%) ^b	90	1	92	2	91	1	89	4	91	1
Favorable rating (n) ^c	25,486	768	4,002	404	21,740	844	1,036	164	52,264	1,153
Favorable rating (%) ^c	64	2	60	4	61	2	65	7	62	1

^aRow totals may not equal totals for all periods because of rounding errors.

^bProportion of hunters that indicated they experienced no or only minor interference from other hunters.

^cHunters rating their hunting experience as excellent, very good, or good.

Table 8. Comparison of the estimated number of hunters, hunting effort, and harvest between 2010 and 2011 Michigan spring turkey hunting seasons, summarized by regions.

Region ^a	Hunters (No.) ^b					Hunting efforts (days)					Harvest (No.)				
	2010		2011		Change (%)	2010		2011		Change (%)	2010		2011		Change (%)
	Total	95% CL	Total	95% CL		Total	95% CL	Total	95% CL		Total	95% CL	Total	95% CL	
UP	3,682	232	3,543	282	-4	22,142	2,860	19,455	2,893	-12	1,425	239	1,205	246	-15
NLP	26,249	710	23,220	786	-12*	120,926	5,866	99,623	5,243	-18*	7,910	556	7,511	582	-5
SLP	59,386	944	54,572	967	-8*	258,470	7,664	247,918	7,813	-4	27,158	952	21,606	856	-20*
Unknown	4,154	445	3,717	420		17,356	2,359	16,997	2,619		558	163	266	114	
Total	92,463	943	84,125	957	-9*	418,895	9,456	383,994	9,184	-8*	37,051	1,109	30,587	1,035	-17*

^aRegions included the Upper Peninsula (UP), the Northern Lower Peninsula north of Management Unit ZZ (NLP), and Management Unit ZZ in the Southern Lower Peninsula (SLP).

^bNumber of hunters did not add up to statewide total because hunters can hunt in more than one unit for the unlimited quota hunt.

*P<0.005.

Table 9. Comparison of estimated hunter success, hunter satisfaction, and hunt interference between 2010 and 2011 Michigan spring turkey hunting season, summarized by regions.

Region ^a	Hunter success					Hunter satisfaction ^b					Noninterfered hunters ^c				
	2010		2011		Difference (%)	2010		2011		Difference (%)	2010		2011		Difference (%)
	%	95% CL	%	95% CL		%	95% CL	%	95% CL		%	95% CL	%	95% CL	
UP	39	6	34	7	-5	60	6	56	7	-3	92	3	94	3	2
NLP	30	2	32	2	2	53	2	53	2	0	91	1	91	1	1
SLP	46	1	40	1	-6*	74	1	67	1	-7*	89	1	90	1	1
Total	40	1	36	1	-4*	66	1	62	1	-4*	90	1	91	1	1

^aRegions included the Upper Peninsula (UP), the Northern Lower Peninsula north of Management Unit ZZ (NLP), and Management Unit ZZ in the Southern Lower Peninsula (SLP).

^bHunters rating their hunting experience as excellent, very good, or good.

^cProportion of hunters that indicated they experienced no or only minor interference from other hunters.

*P<0.005.

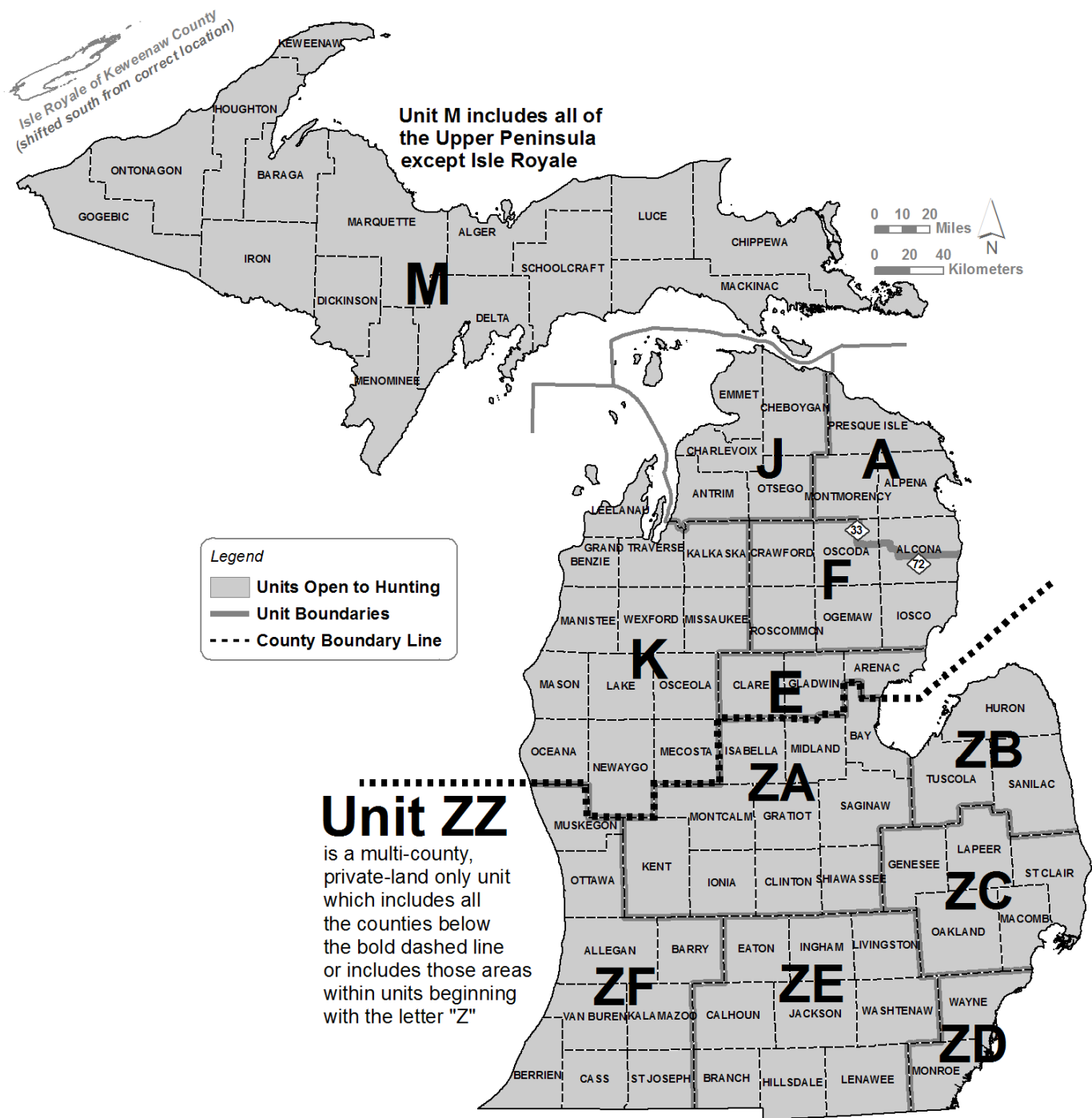


Figure 1. Management units in Michigan open to spring turkey hunting in 2011.

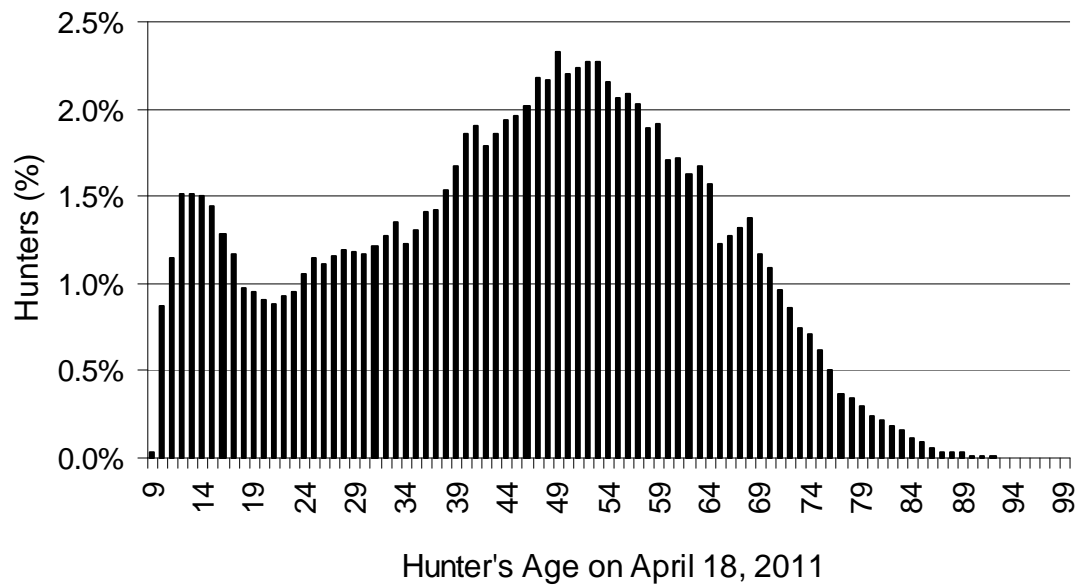


Figure 2. Age of people that purchased a turkey hunting license in Michigan for the 2011 spring hunting season ($\bar{x} = 45$ years). Licenses were purchased by 106,889 people.

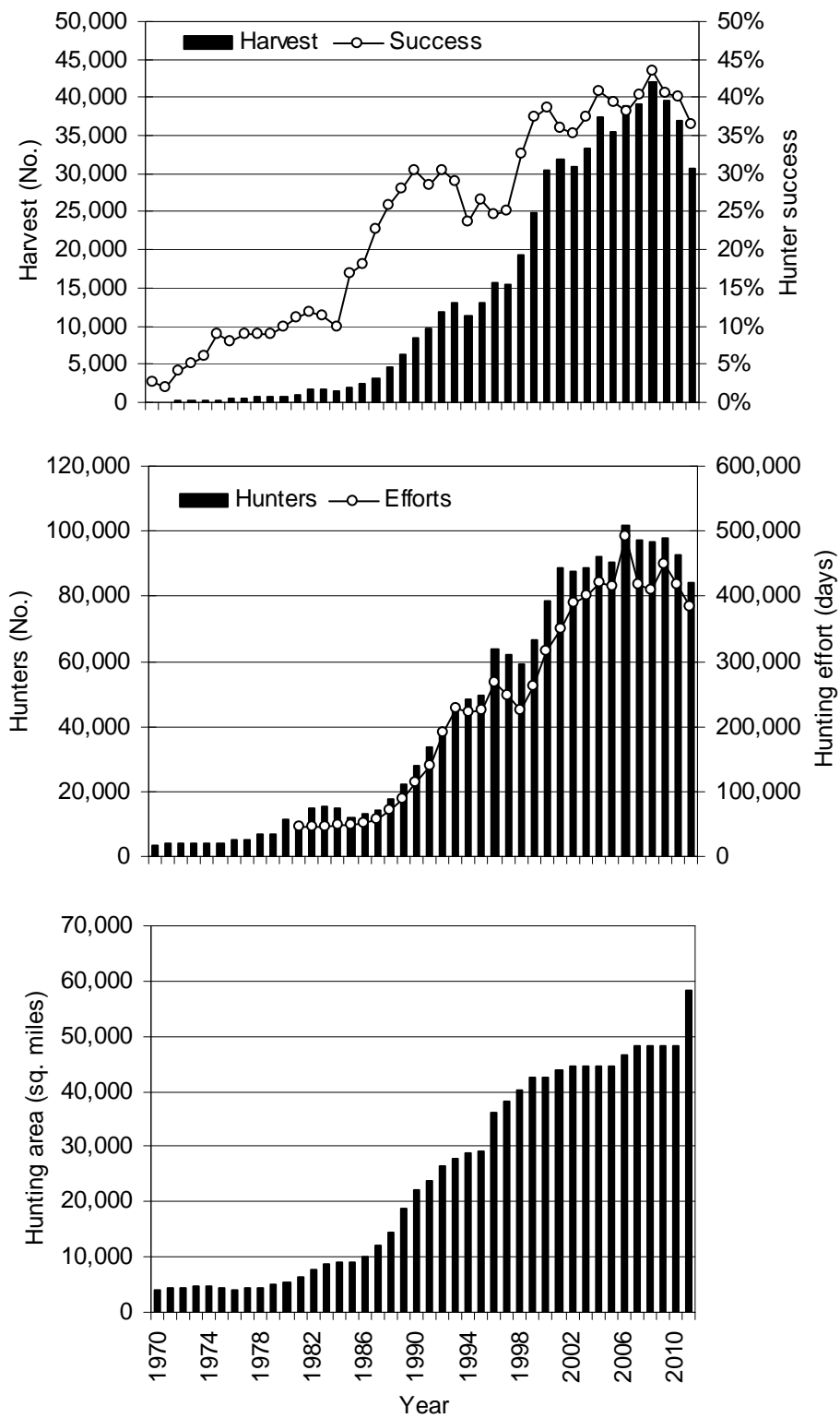


Figure 3. Estimated number of hunters, harvest, hunting efforts, hunter success, and area open to hunting during the Michigan spring turkey hunting season, 1970-2011. Estimates of hunting effort generally were not available before 1981.

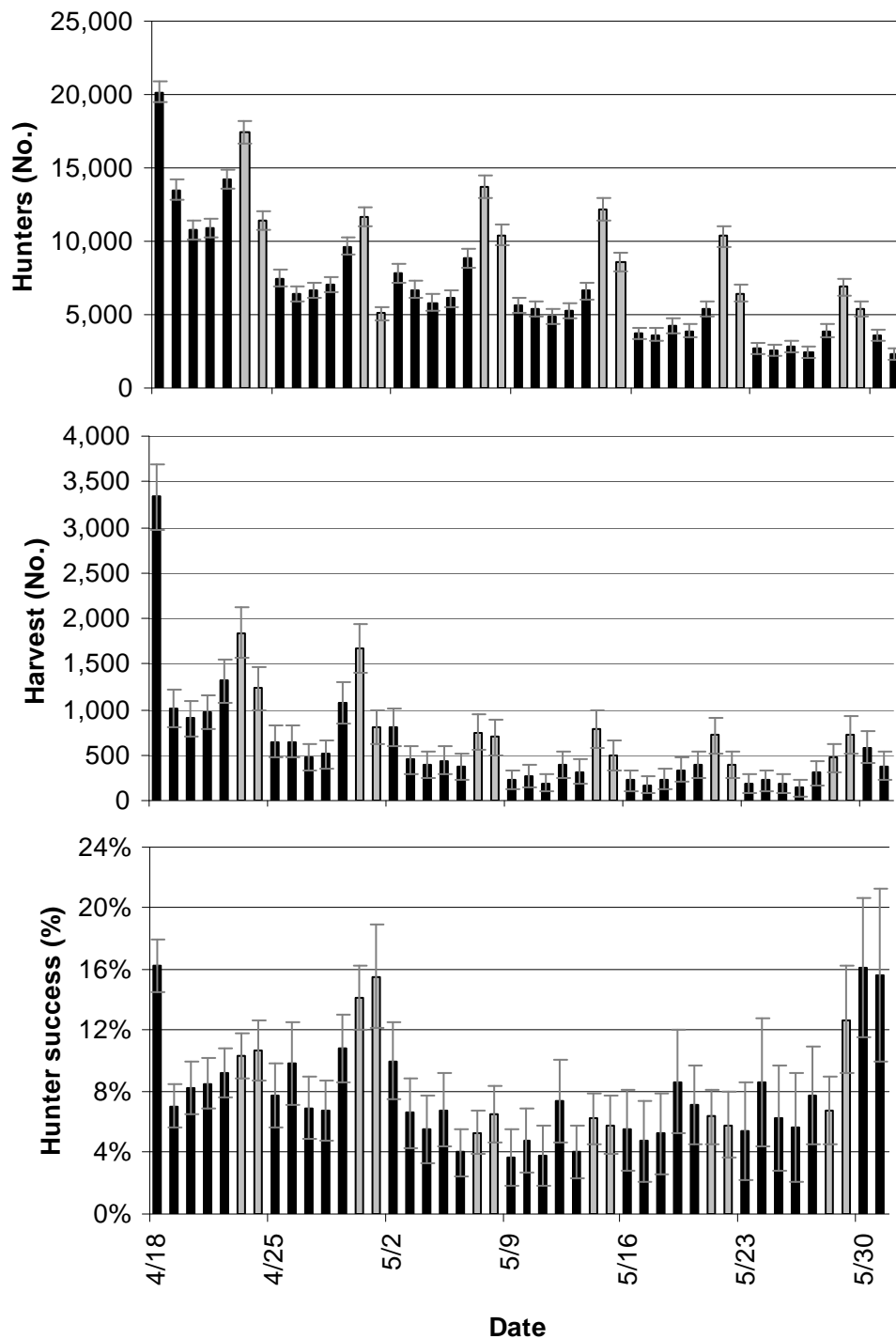


Figure 4. Estimated number of hunters, harvest, and hunter success by date during the 2011 Michigan spring turkey hunting season (includes all hunts). An additional $1,953 \pm 316$ birds were taken on unknown dates. Gray-shaded bars indicate weekends. Vertical bars represent the 95% confidence interval.

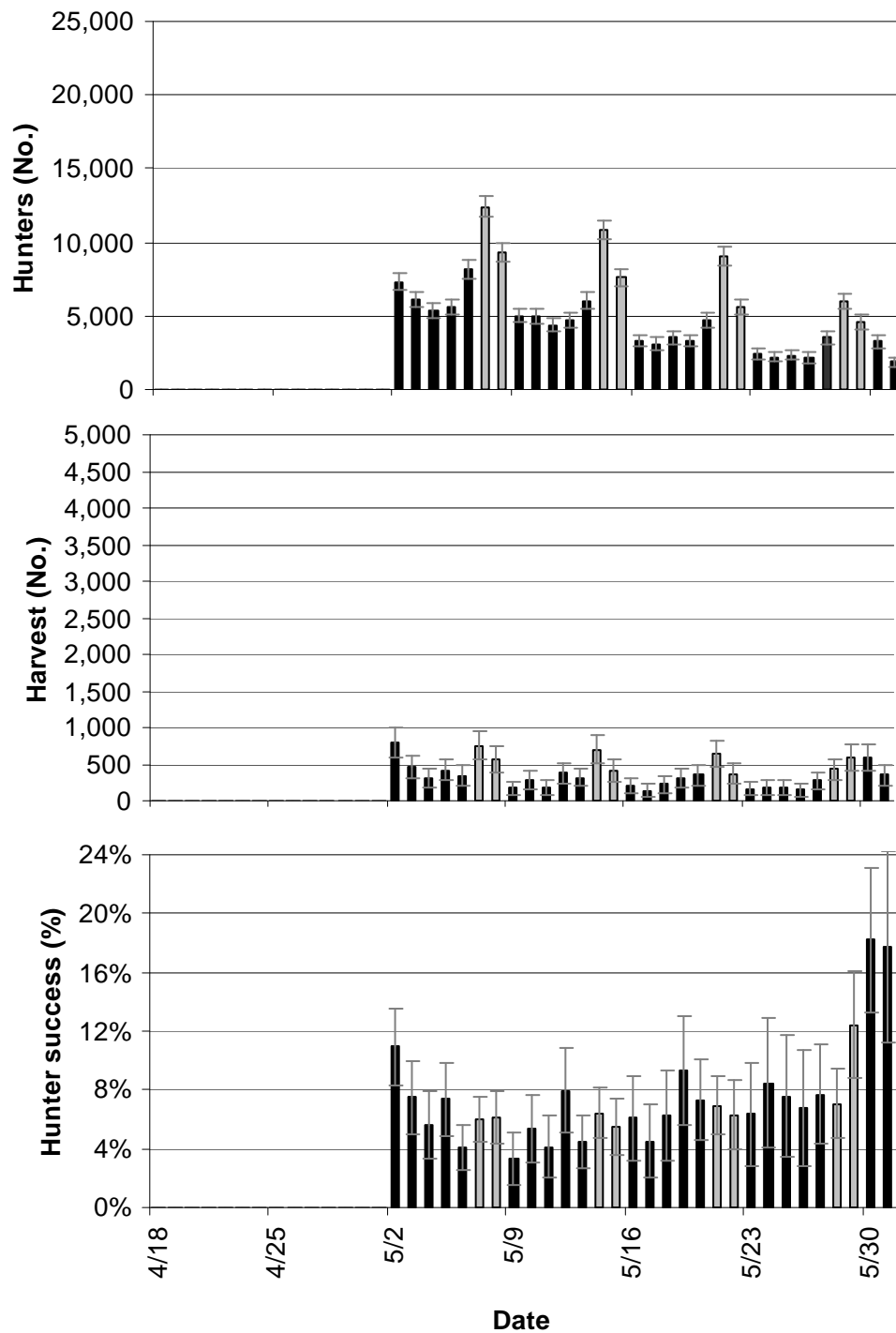


Figure 5. Estimated number of hunters, harvest, and hunter success by date during Hunt 234 of the 2011 Michigan spring turkey hunting season (May 2-31). An additional 915 ± 230 birds were taken on unknown dates. Gray-shaded bars indicate weekends. Vertical bars represent the 95% confidence interval.

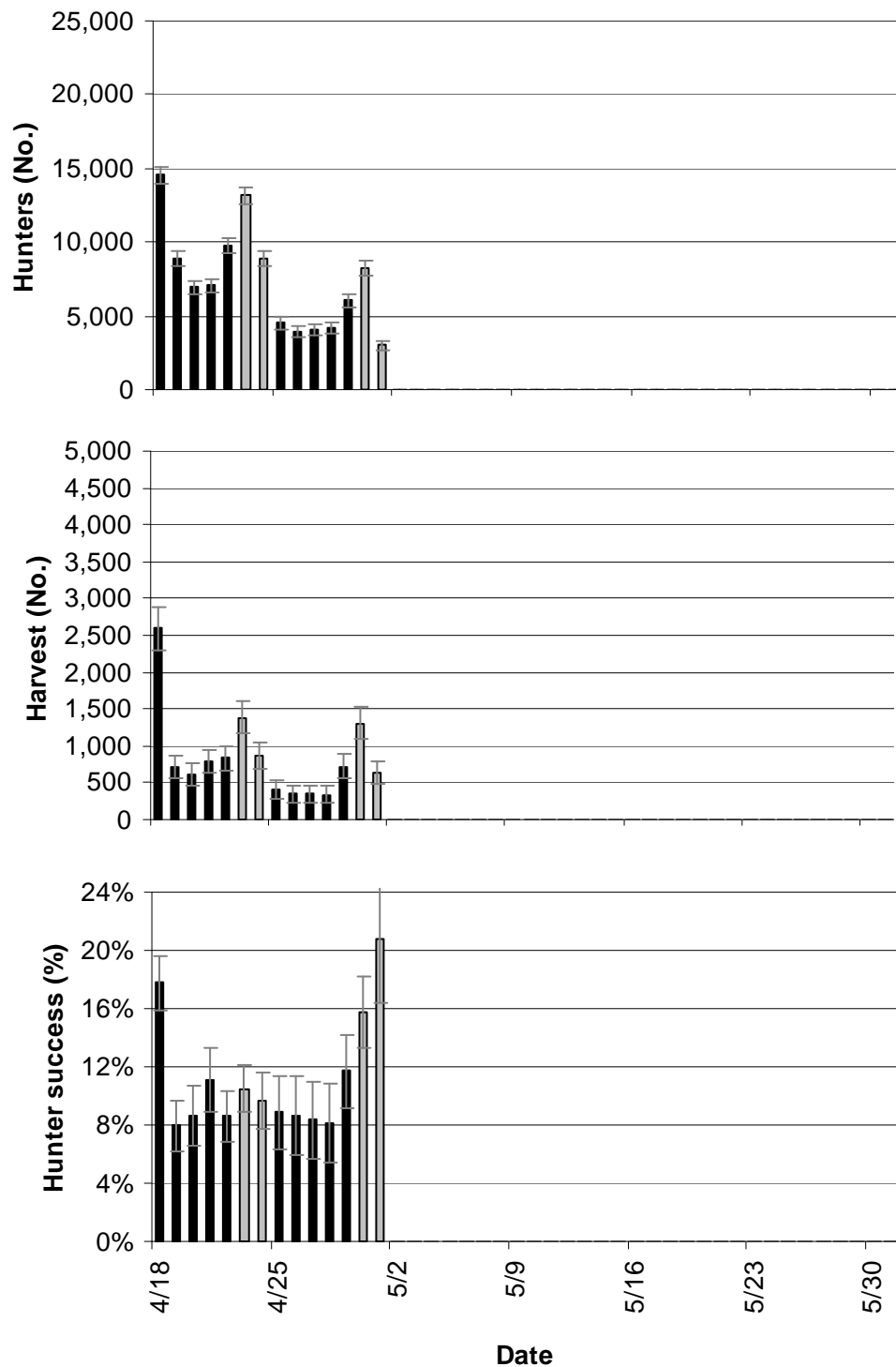


Figure 6. Estimated number of hunters, harvest, and hunter success by date during Hunt 301 of the 2011 Michigan spring turkey hunting season (April 18-May 1). An additional 756 ± 172 birds were taken on unknown dates. Gray-shaded bars indicate weekends. Vertical bars represent the 95% confidence interval.

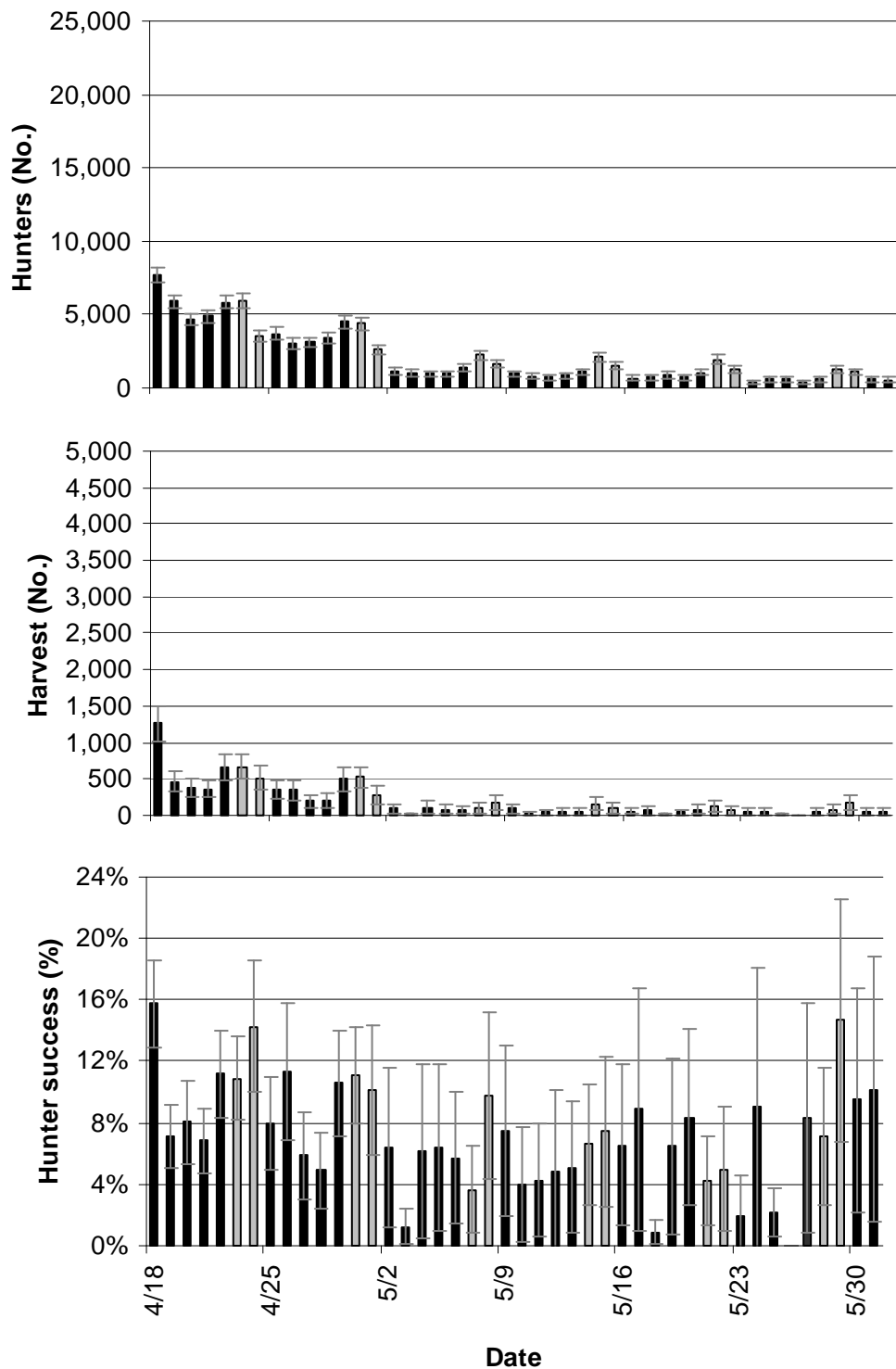


Figure 7. Estimated number of hunters, harvest, and hunter success by date during all hunts, except hunts 234 and 301 of the 2011 Michigan spring turkey hunting season. An additional 325 ± 133 birds were taken on unknown dates. Gray-shaded bars indicate weekends. Vertical bars represent the 95% confidence interval.

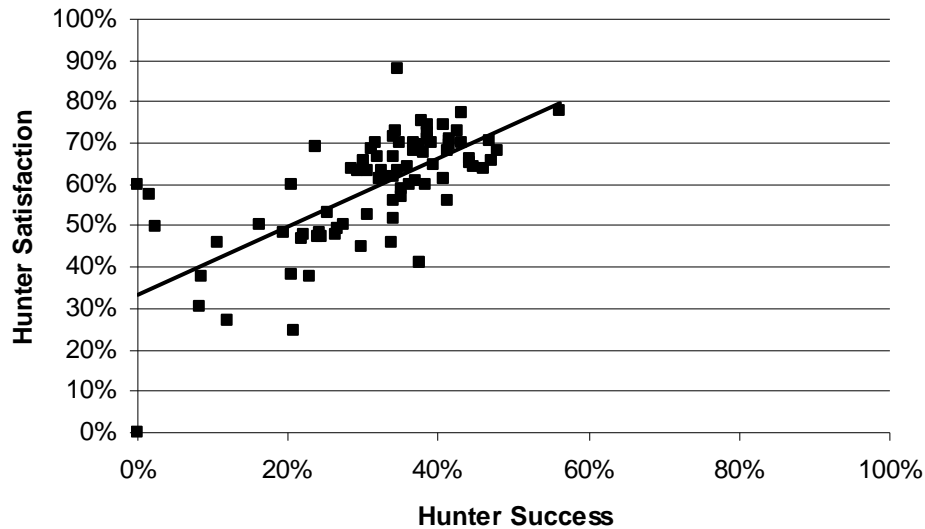


Figure 8. Relationship between hunter satisfaction (expressed as the percentage of hunters rating their hunting experience as excellent, very good, or good) and hunter success for each of 81 counties in Michigan during the 2011 spring turkey hunting season (included only counties with at least 30 hunters).

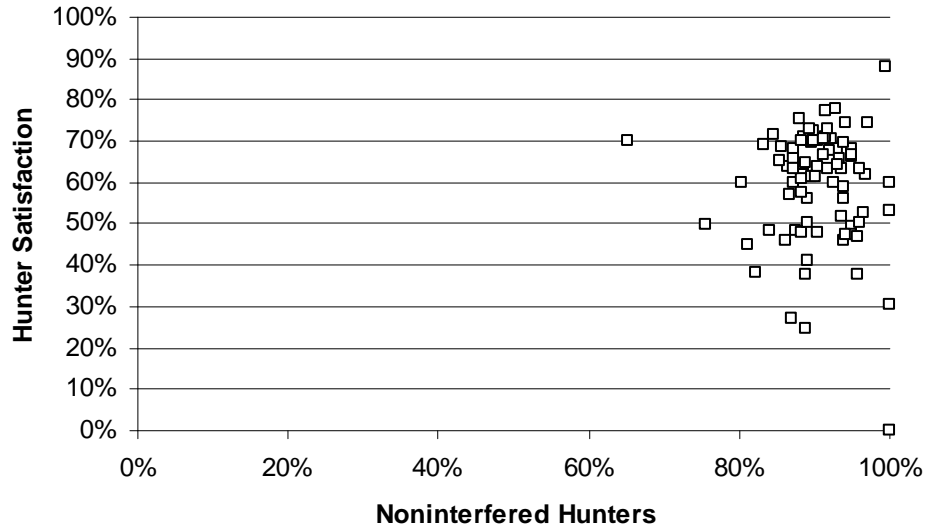


Figure 9. Relationship between hunter satisfaction (expressed as the percentage of hunters rating their hunting experience as excellent, very good, or good) and hunter interference for each of 81 counties in Michigan during the 2011 spring turkey hunting season (included only counties with at least 30 hunters). Noninterfered hunters were the proportion of hunters that indicated that they experienced no or only minor interference from other hunters.